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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,809	11/28/2001	Hong Suk Yoo	049128-5039	9089

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EXAMINER

SEFER, AHMED N

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 01/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/994,809

Applicant(s)

YOO ET AL.

Examiner

A. Sefer

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 12-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-11) is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 7 recites the limitation "the width of the second drain contact hole". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Sah USPN 6,218,221.

Sah discloses in figs. 8A-8H1 an array substrate for a liquid crystal display device, comprising: a substrate; a drain electrode at an upper portion of the substrate, the drain electrode including, at least in part, two layers of conductive materials 48 and having a first drain contact hole (unnumbered) penetrating the two layers; a protective layer 52 over the drain electrode, the protecting layer having a second drain contact hole 56a communicating with the first drain contact hole; and a pixel electrode 54 over the protective layer, the pixel electrode contacting the drain electrode at inner surfaces of the first drain contact hole formed in the drain electrode through the second drain contact hole.

As for claim 2, Sah discloses a width of the second drain contact hole 56a is larger than or substantially equal to that of the first drain contact hole.

As for claim 3, Sah discloses (see col. 4, lines 40-55 and col. 6, lines 18-42) a first metal layer 48a and a second metal layer 48b on the first metal layer, the first metal layer being titanium (Ti), and the second metal layer being aluminum (Al).

6. Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Akamatsu et al. USPN 6,414,730.

Akamatsu et al disclose (see figs. 1-6, col. 8, lines 60-67 and col. 9, lines 1-4) an array substrate for a liquid crystal display device, comprising: a substrate; a drain electrode 57/59 at an upper portion of the substrate, the drain electrode including, at least in part, two layers of conductive materials and having a first drain contact hole (unnumbered) penetrating the two layers; a protective layer 68 over the drain electrode, the protecting layer having a second drain

contact hole 87 communicating with the first drain contact hole; and a pixel electrode 69 over the protective layer, the pixel electrode contacting the drain electrode at inner surfaces of the first drain contact hole formed in the drain electrode through the second drain contact hole.

As for claim 2, Akamatsu et al disclose a width of the second drain contact hole 87 is larger than or substantially equal to that of the first drain contact hole.

As for claim 3, Akamatsu et al disclose (see col. 8, lines 55-57) a first metal layer 80 and a second metal layer 81 on the first metal layer, the first metal layer being titanium (Ti), and the second metal layer being aluminum (Al).

As for claim 4, Akamatsu et al disclose a gate line 60 over the substrate for receiving a scanning signal; a data line 61 crossing the data line for receiving a data signal; a gate electrode 52 connected to the gate line; a gate insulating film 53 covering the gate line and the gate electrode; an active layer 54 overlapping the gate electrode over the gate insulating film; an ohmic contact layer 55/56 on a part of the active layer, the ohmic contact layer defining a channel region in the active layer; and a source electrode 58 connected to the data line, the source electrode and said drain electrode being absent over the channel region and being in contact with the ohmic contact layer.

As for claim 5, Akamatsu et al disclose first metal layer 80 and a second metal layer 81 on the first metal layer, and wherein the first metal layer and the ohmic contact layer 55/56 thereunder have substantially the same pattern.

As for claim 6, Akamatsu et al disclose a data pad 73 at one end of the data line over the substrate, the data pad including, at least in part, said two layers of conductive materials, the data pad having a first data contact hole (unnumbered) penetrating the two layers; and a data pad

terminal electrode 76 over the protective layer, wherein the protective layer is situated over the data pad, and has a second data contact hole 86 communicating with the first data contact hole, and wherein the data pad terminal electrode contacts the data pad at inner surfaces of the first data contact hole formed in the data pad through the second data contact hole.

As for claim 7, Akamatsu et al disclose the width of the second data contact hole 86 is larger than or substantially equal to that of the first data contact hole.

As for claim 8, Akamatsu et al disclose (see col. 8, lines 55-57) a first metal layer 80 and a second metal layer 81 on the first metal layer, the first metal layer being titanium (Ti), and the second metal layer being aluminum (Al).

As for claim 9, Akamatsu et al disclose the data pad over the gate insulating film 53.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akamatsu et al. in view of Dojo et al. USPN 6,528,357.

Akamatsu et al disclose the device structure as recited in the claim, but do not specifically a data pad including a semiconductor layer beneath a first metal layer.

Art Unit: 2826

Dojo et al disclose (see figs. 1 and 6 and col. 4, lines 8-10) two metal layers 110, a first metal layer and a second metal layer on the first metal layer, and a data pad 162 including a semiconductor layer 120 beneath the first metal layer.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Dojo et al with the device of Akamatsu et al since that would suppress fluctuations in signal line capacitance as taught by Dojo et al.

As for claim 11, Dojo et al disclose the first metal layer of the two layers of the data pad and the underlying semiconductor layer having substantially the same pattern.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (703) 605-1227.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601.

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

ANS
December 31, 2003